



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Gary HALLMARK et al.

Confirmation No.: 4042

Application No.: 09/757,399

Group Art Unit: 2171

Filed: January 5, 2001

Examiner: Coby, F.

Title: METHOD AND APPARATUS FOR
IMPLEMENTING PARALLEL OPERATION
IN A DATABASE MANAGEMENT SYSTEM

Commissioner for Patents
Washington, D.C. 20231

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DRAWING TRANSMITTAL LETTER Technology Center 2100

Sir:

Enclosed herewith please find:

- () _____ sheets of redlined drawing(s) which indicate proposed changes to the drawing(s). Upon approval of these proposed changes, formal drawing(s) will be submitted.
- (X) 31 sheets of corrected formal drawing(s), as required by the Office Action dated July 17, 2002.
- () _____ sheets of corrected formal drawing(s), as required by the Notice of Patent Drawing(s) Objection (PTO-948) and approved in the Notice of Allowability dated _____.
- () _____ sheets of formal drawing(s). Please substitute these formal drawing(s) for the informal drawing(s) originally filed.

Examiner's approval of the entry of these drawings is respectfully requested. No new matter has been added.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231.

Date of Deposit: October 17, 2002

Typed Name: Ludy Vajretti

Signature: 

Respectfully Submitted,

By 

Christopher J. Brokaw

Attorney/Agent for Applicant(s)

Reg. No. 45,620

Date: October 17, 2002

Telephone No.: (408) 414-1080 ext

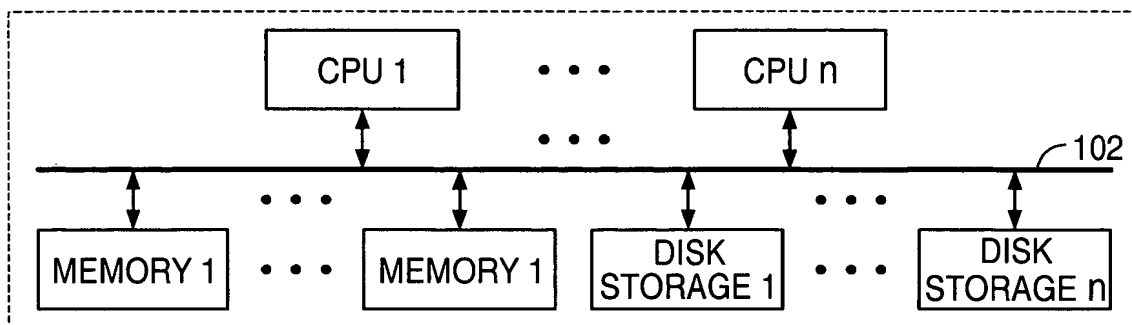


FIG. 1A
(Prior Art)

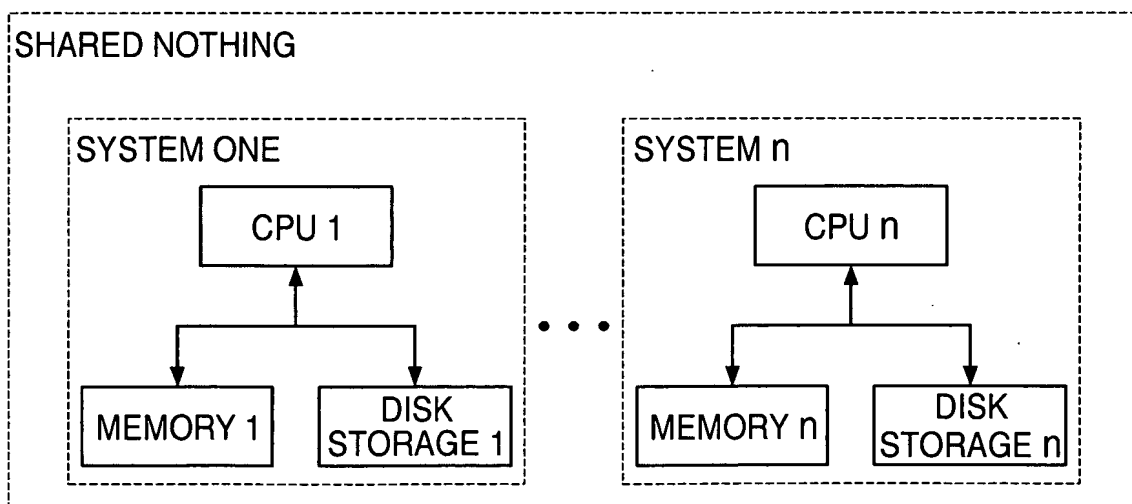


FIG. 1B
(Prior Art)

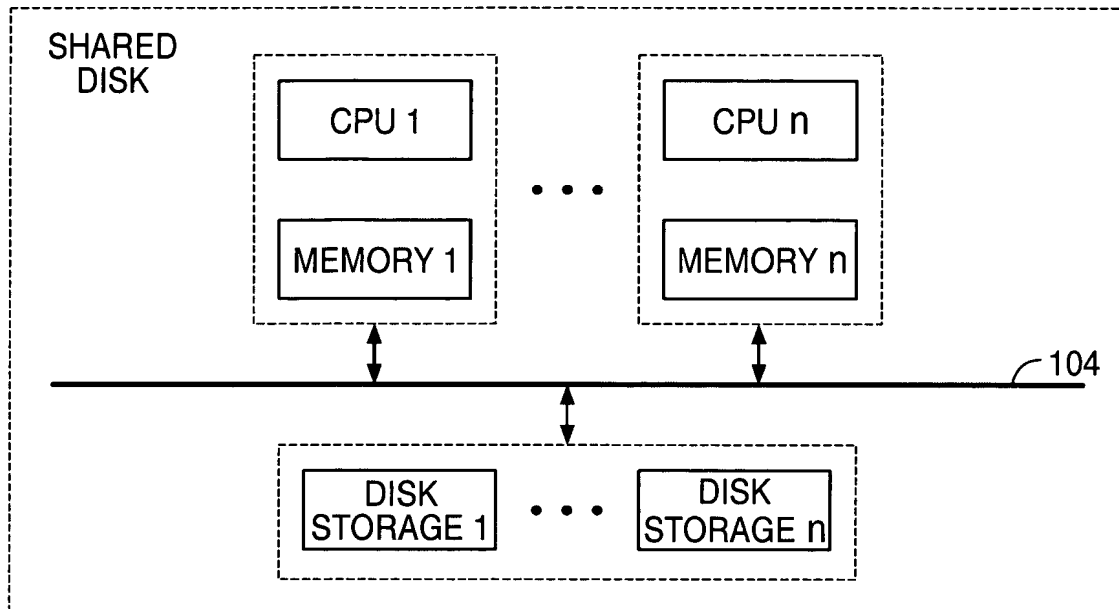


FIG. 1C
(Prior Art)

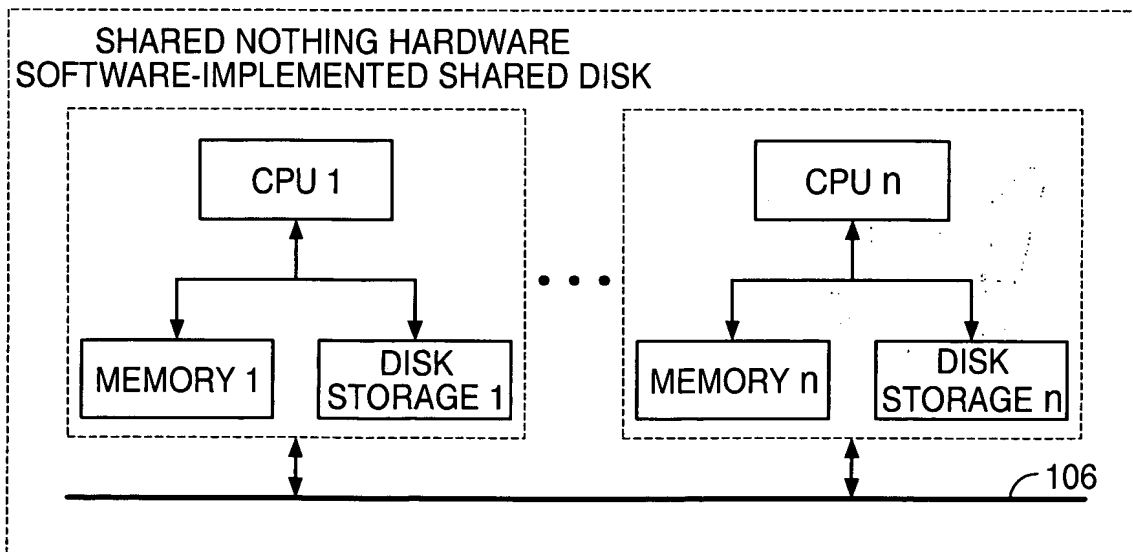
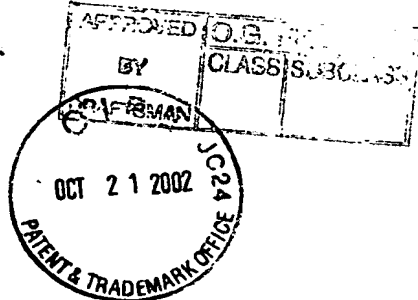


FIG. 1D
(Prior Art)



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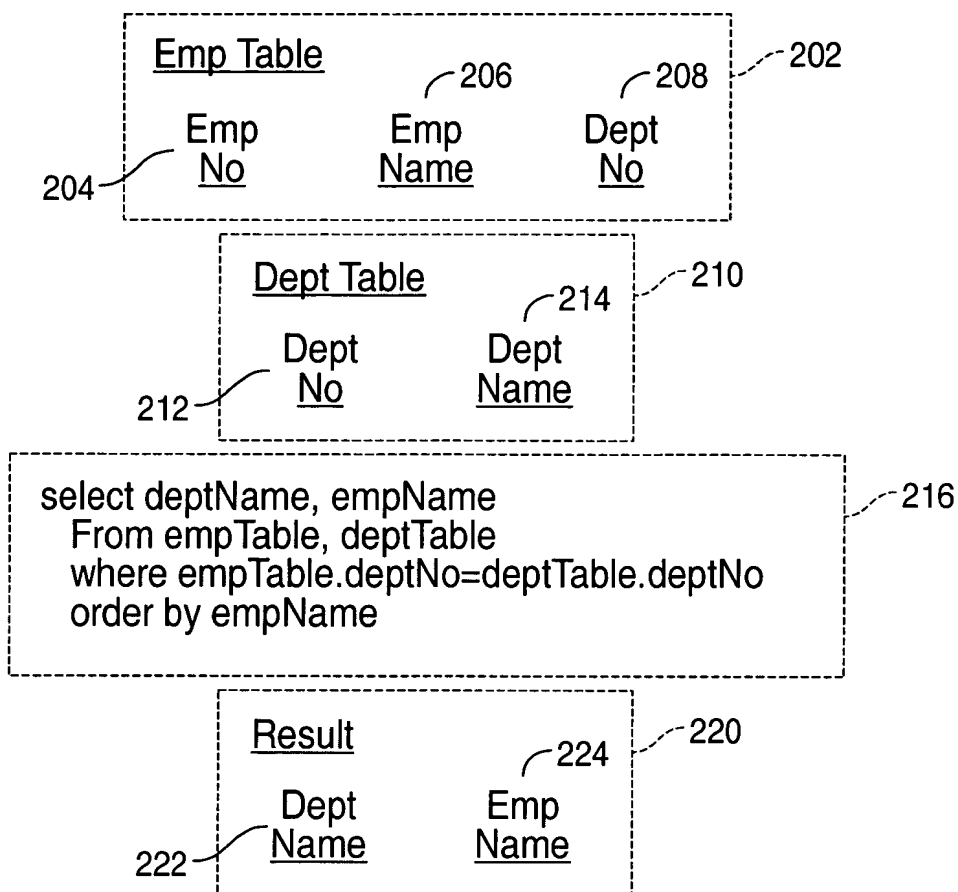


FIG. 2

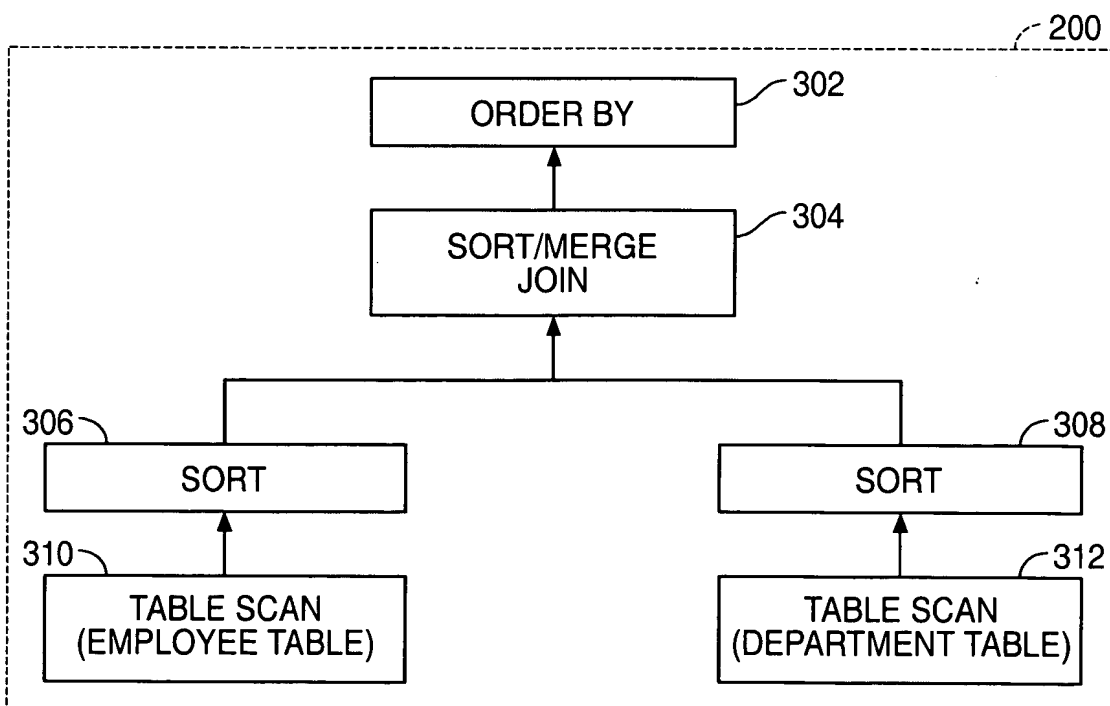


FIG. 3A



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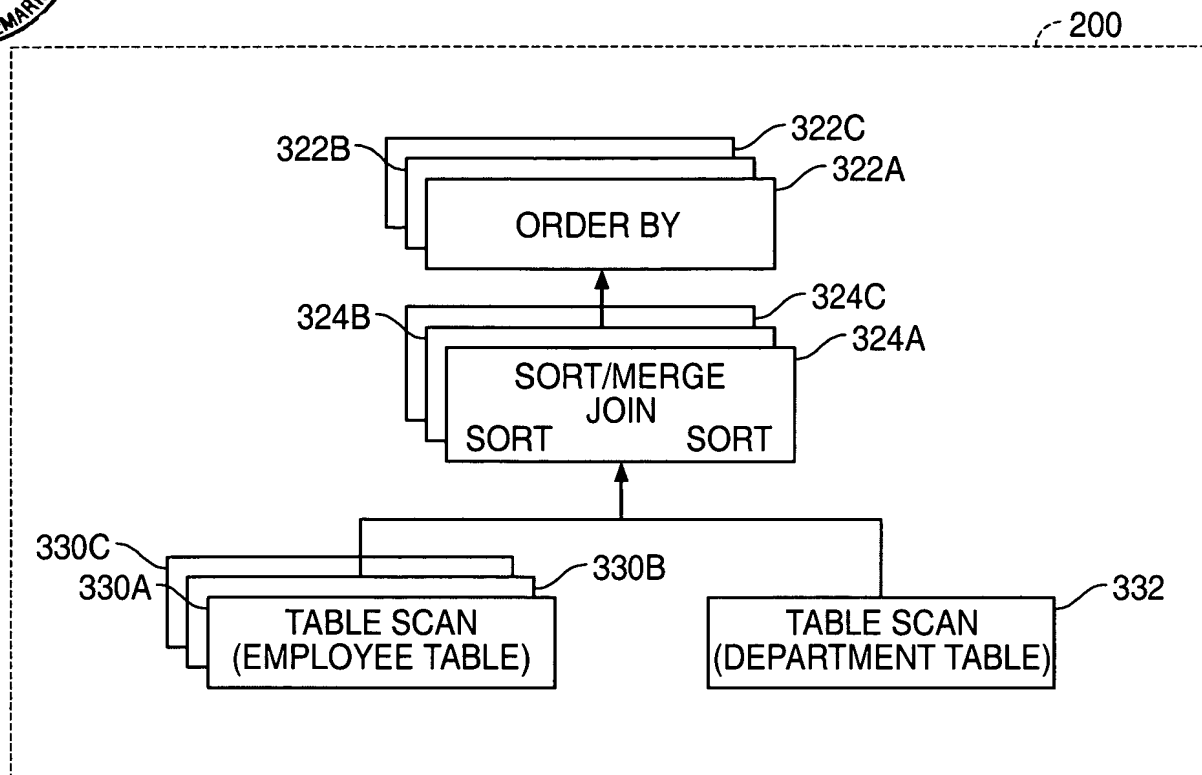


FIG. 3B

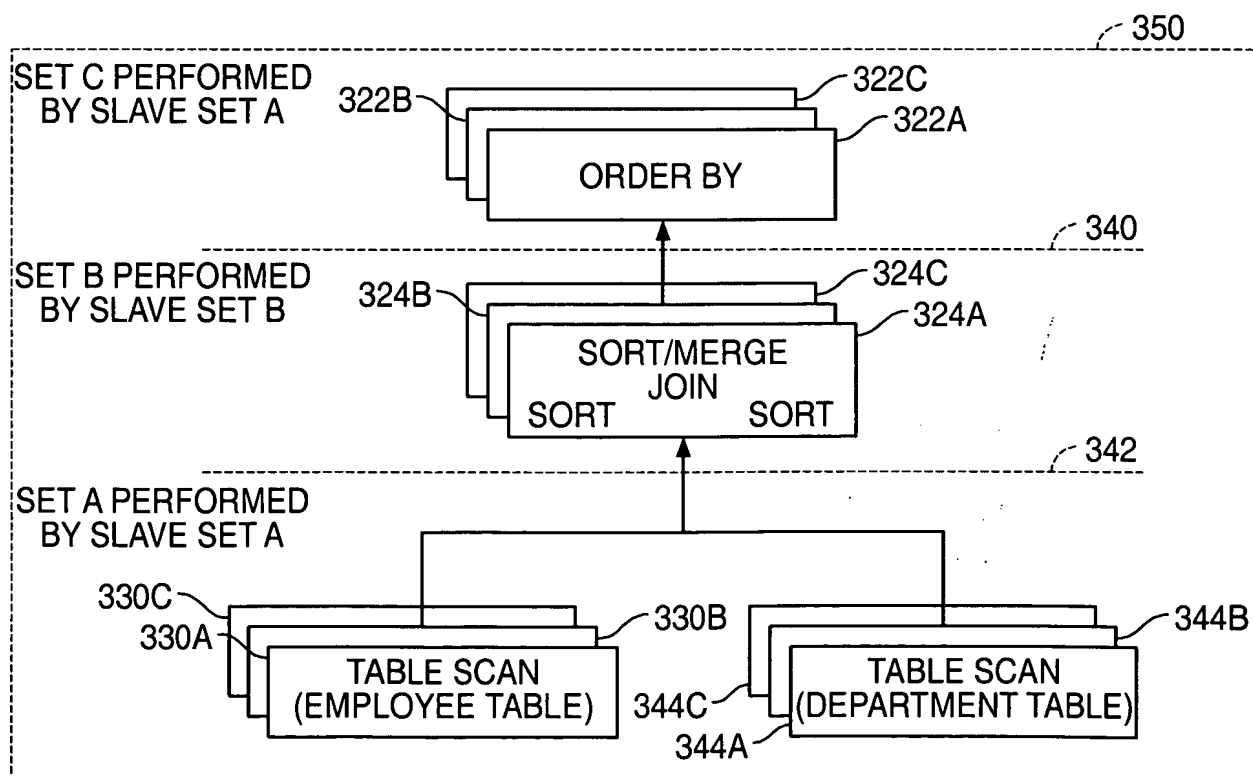


FIG. 3C

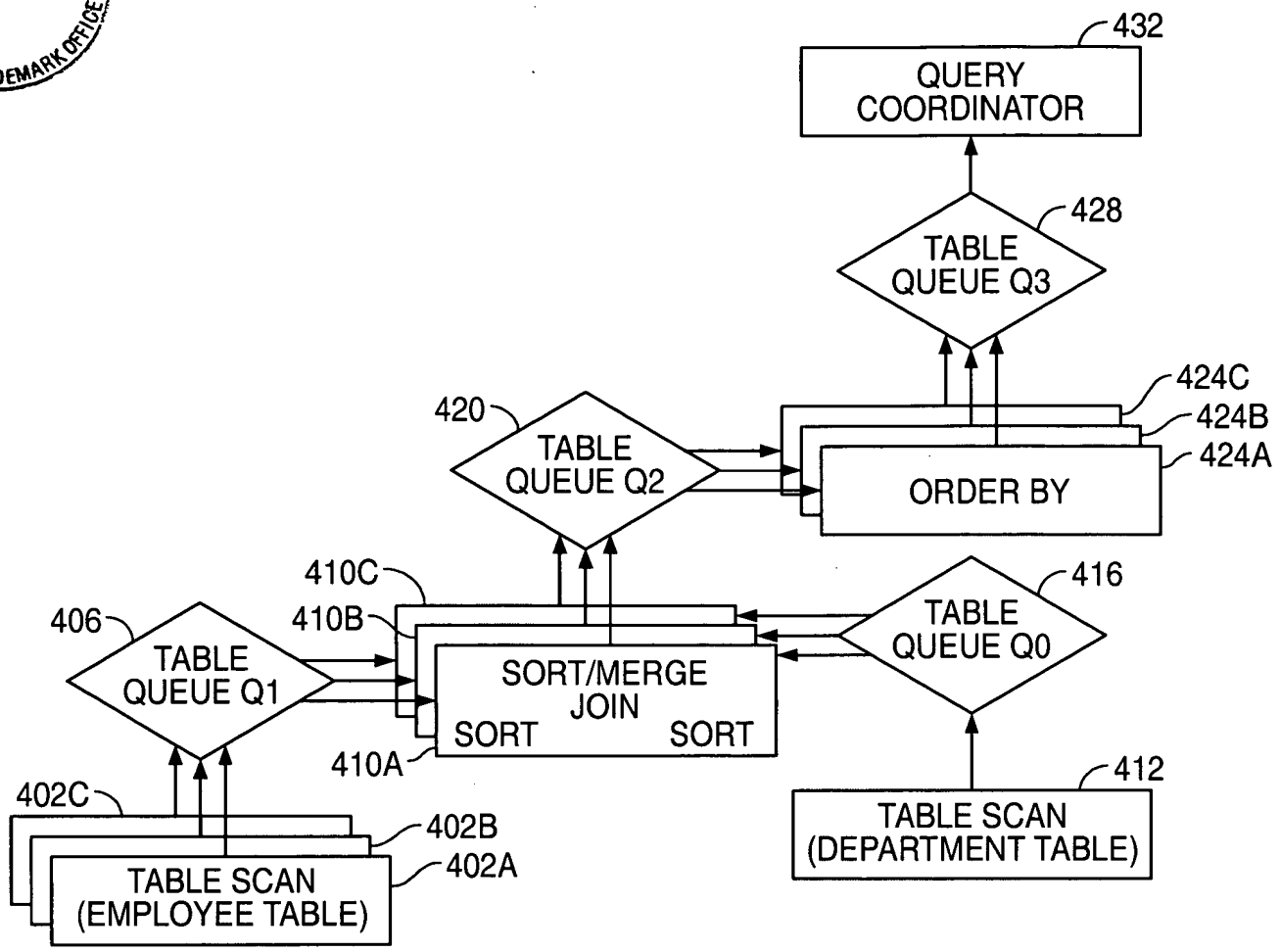


FIG. 4

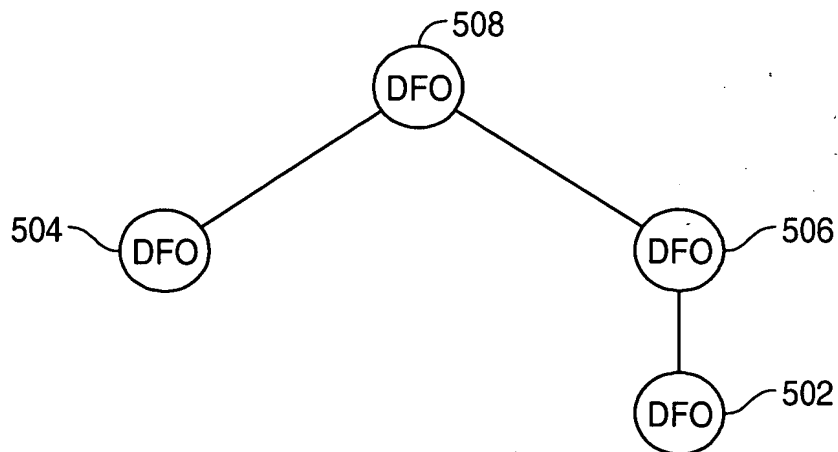
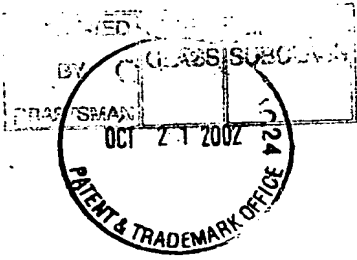


FIG. 5



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DFO Type	Type of DFO (e.g., table scan, sort/merge join)
Pointer to Parent	Pointer to parent node
Pointer to Sibling	Pointer to next-node
Row Source	Row source equivalent for this node
Operation	Identifies table node for this queue
Table Queue Identifier	
Skipped Node Information	Pointer to first child of parallelized node
Non-QC Node Information	Number of key columns in input table
Pointer to First Child	queue
Key Column Number	Parallelized node's partitioning type (e.g., hash, key range, rowid range, round robin)
Partitioning type	Number of clumped columns with parent
Clumped Columns	
Predicates	Contains table scan information (e.g., table name and degree of parallelism)
Control Blocks	Contains information for an indexed nested loop join (e.g., right and left input table)
Table Scan	
Indexed Nested Loop Join names)	Contains information for a sort/merge join (e.g., merge or outer join control flags)
Sort/Merge join	Contains information for index creation (e.g., column list, index type, and storage parameters)
Index Creation	

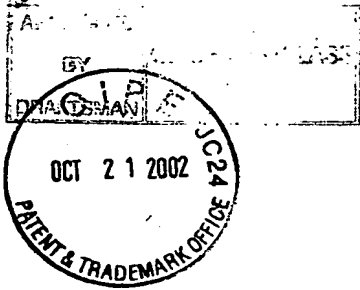
FIG. 6A



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Pointer to Next-to-Execute	Pointer to the next DFO to execute
Table Queue Identifier	Output table queue identifier
Rowid Table Number	Number of tables partitioned by rowid
SQL Statement Size	Size of the SQL statement representing DFO
SQL Statement	SQL statement representing DFO
Flags	
Started	Slave sends "Started" message upon receipt
Ready	Slave sends "Ready" message when input consumed
Close	Slave expects to be closed upon completion

FIG. 6B



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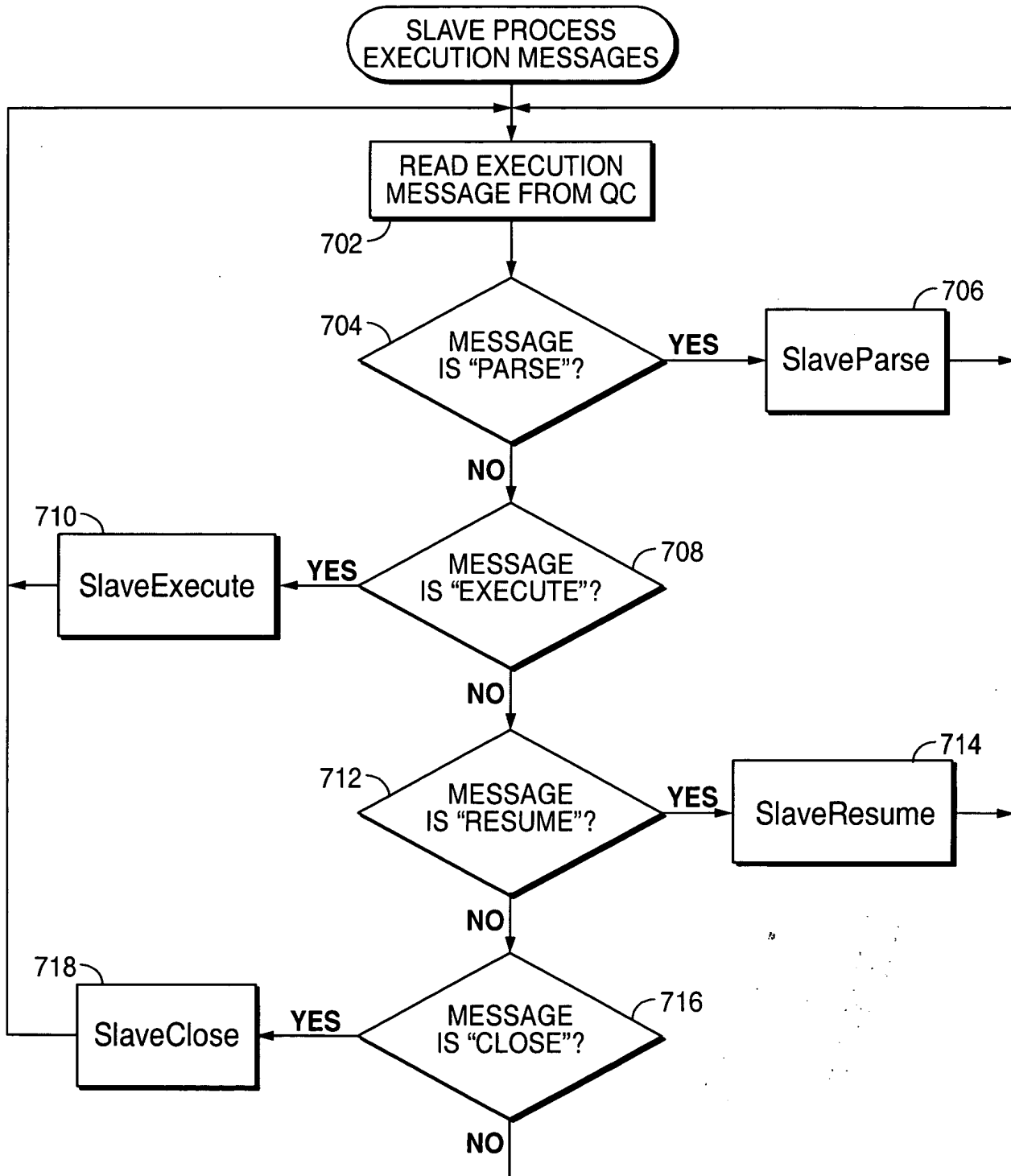
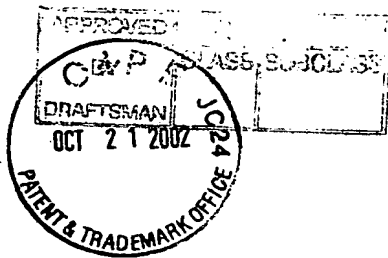


FIG. 7A



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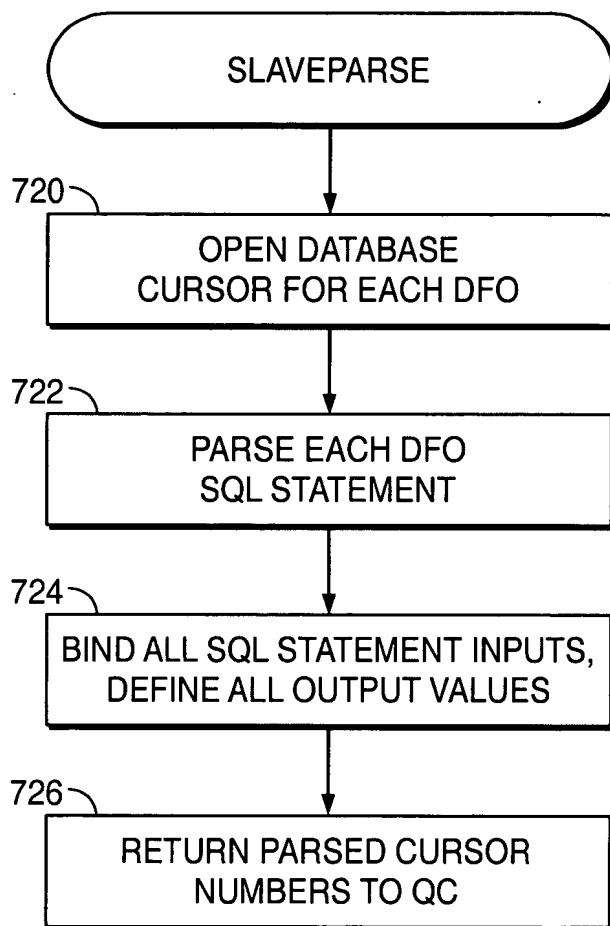
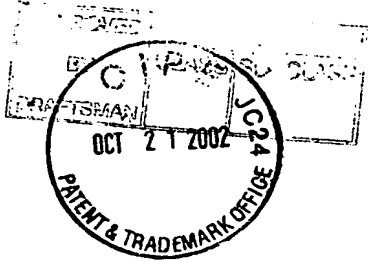


FIG. 7B



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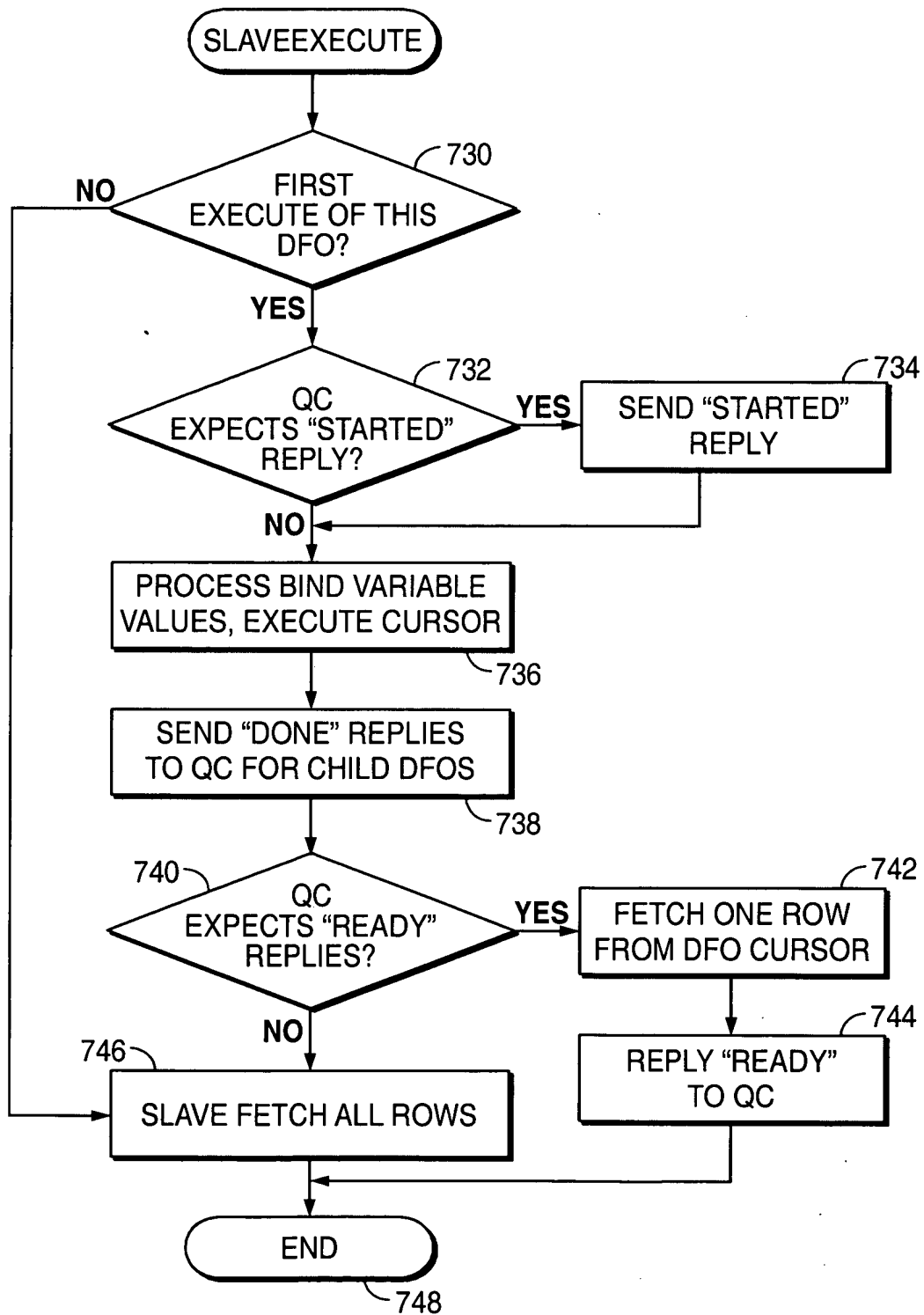
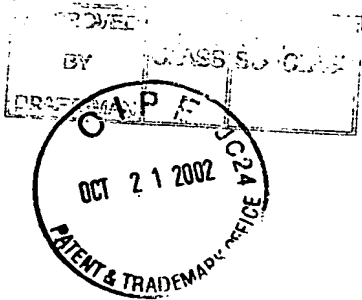


FIG. 7C



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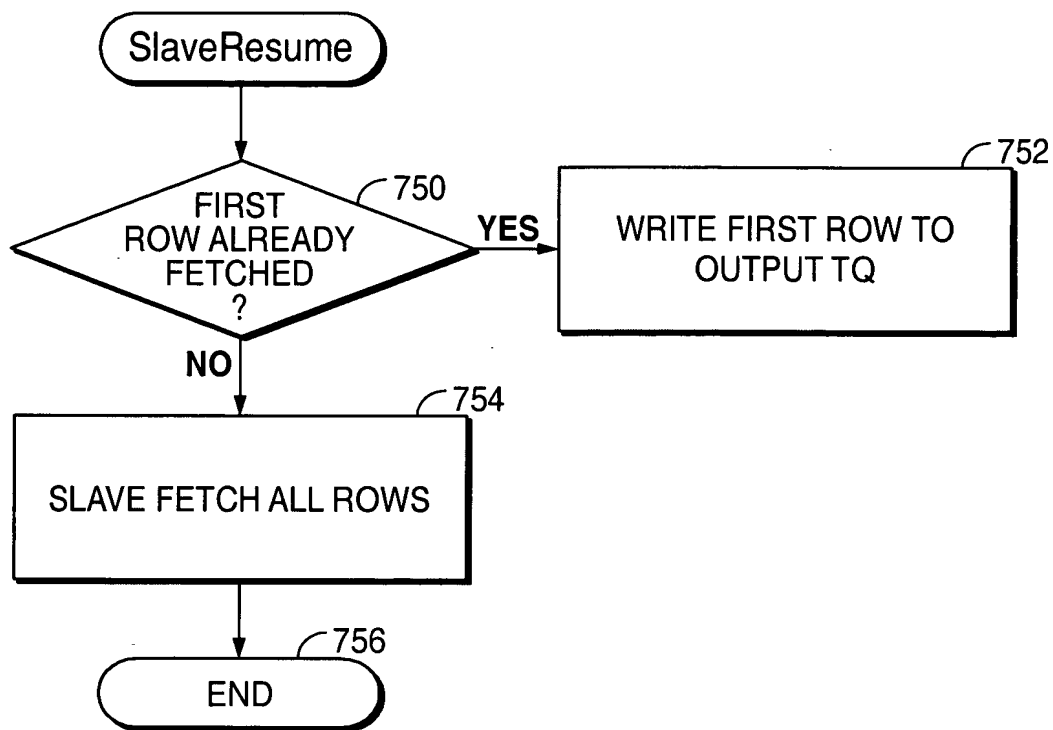


FIG. 7D

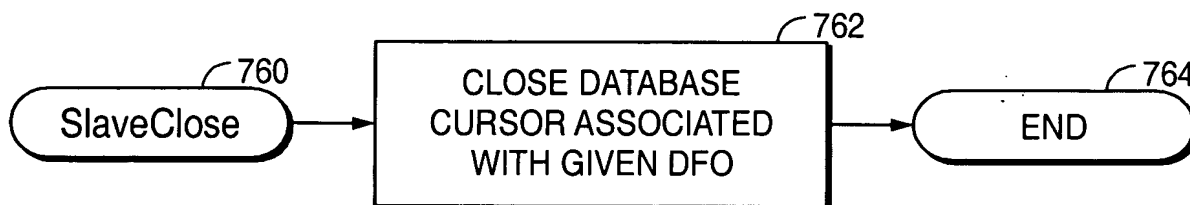
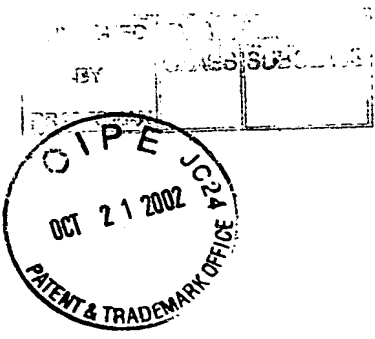


FIG. 7E



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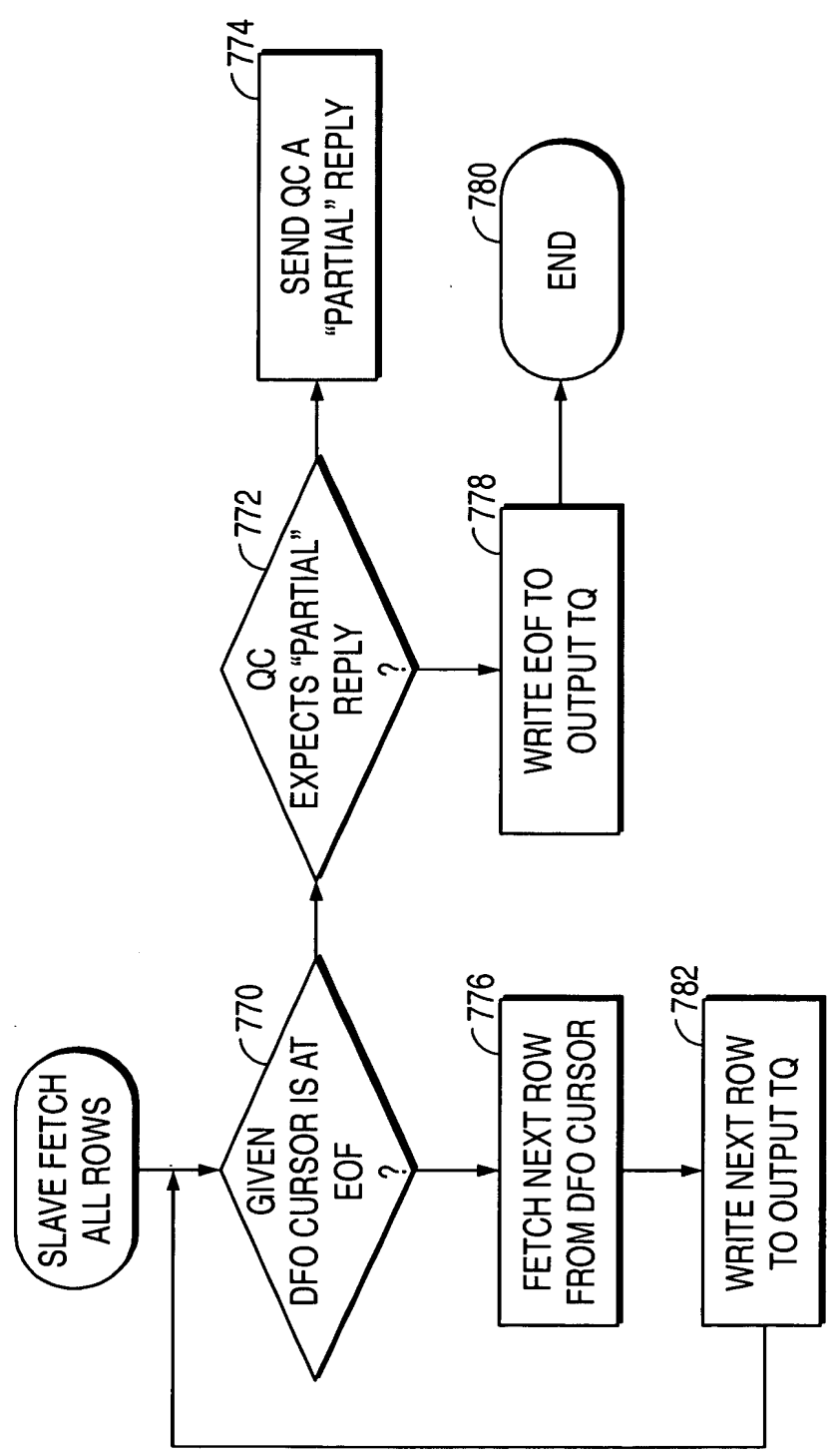


FIG. 7F

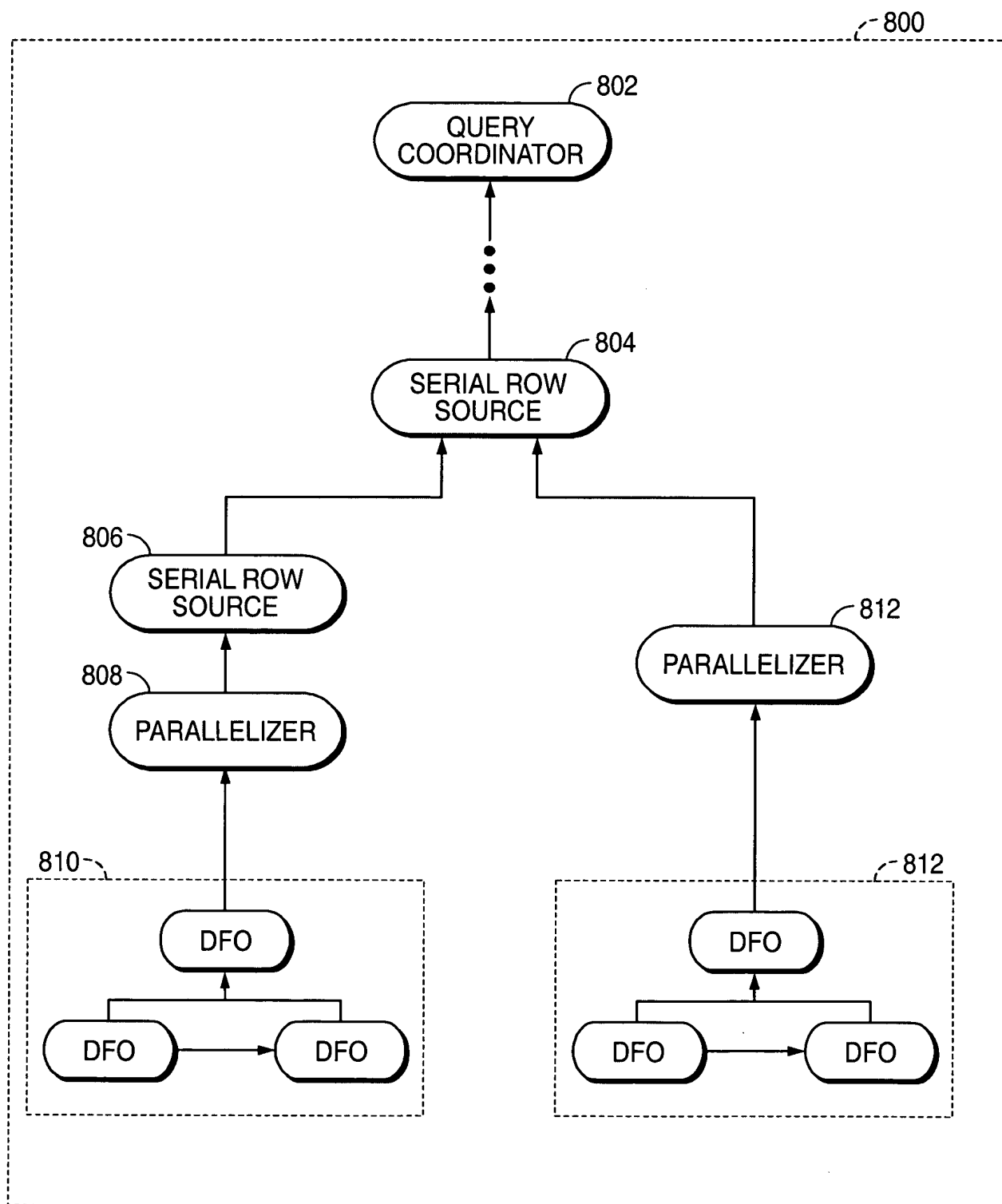


FIG. 8

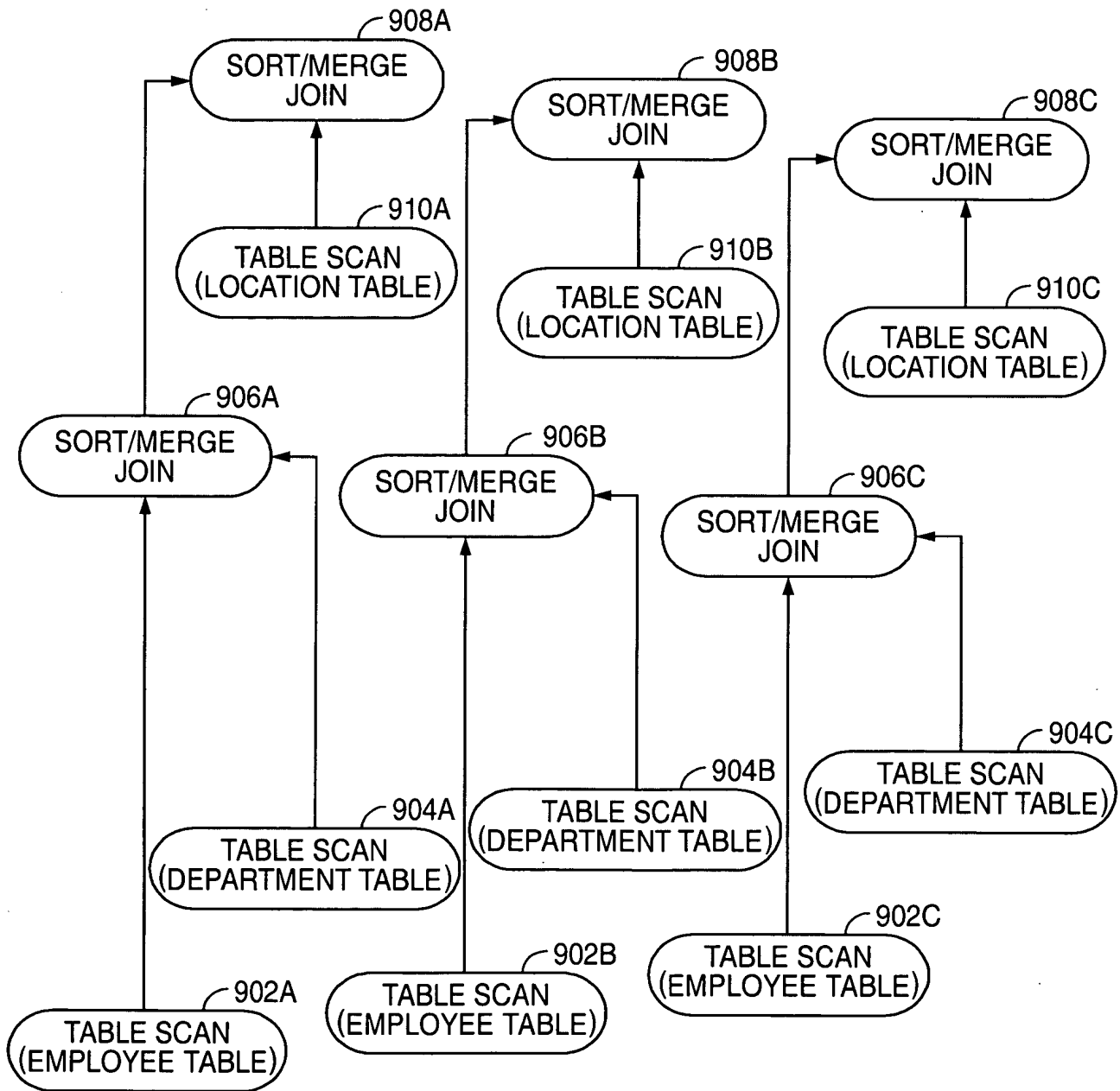
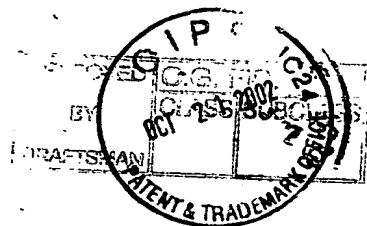


FIG. 9



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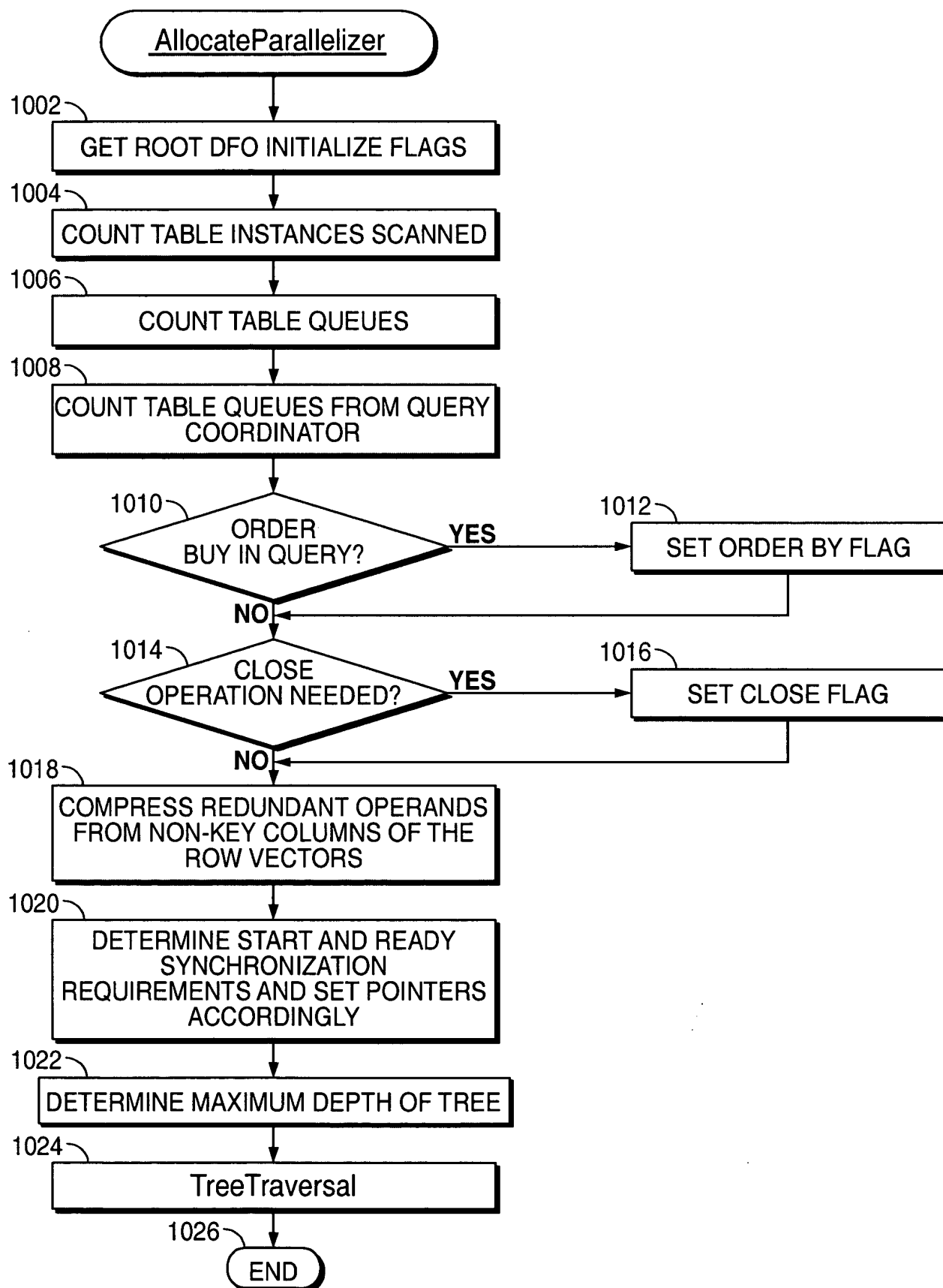


FIG. 10A



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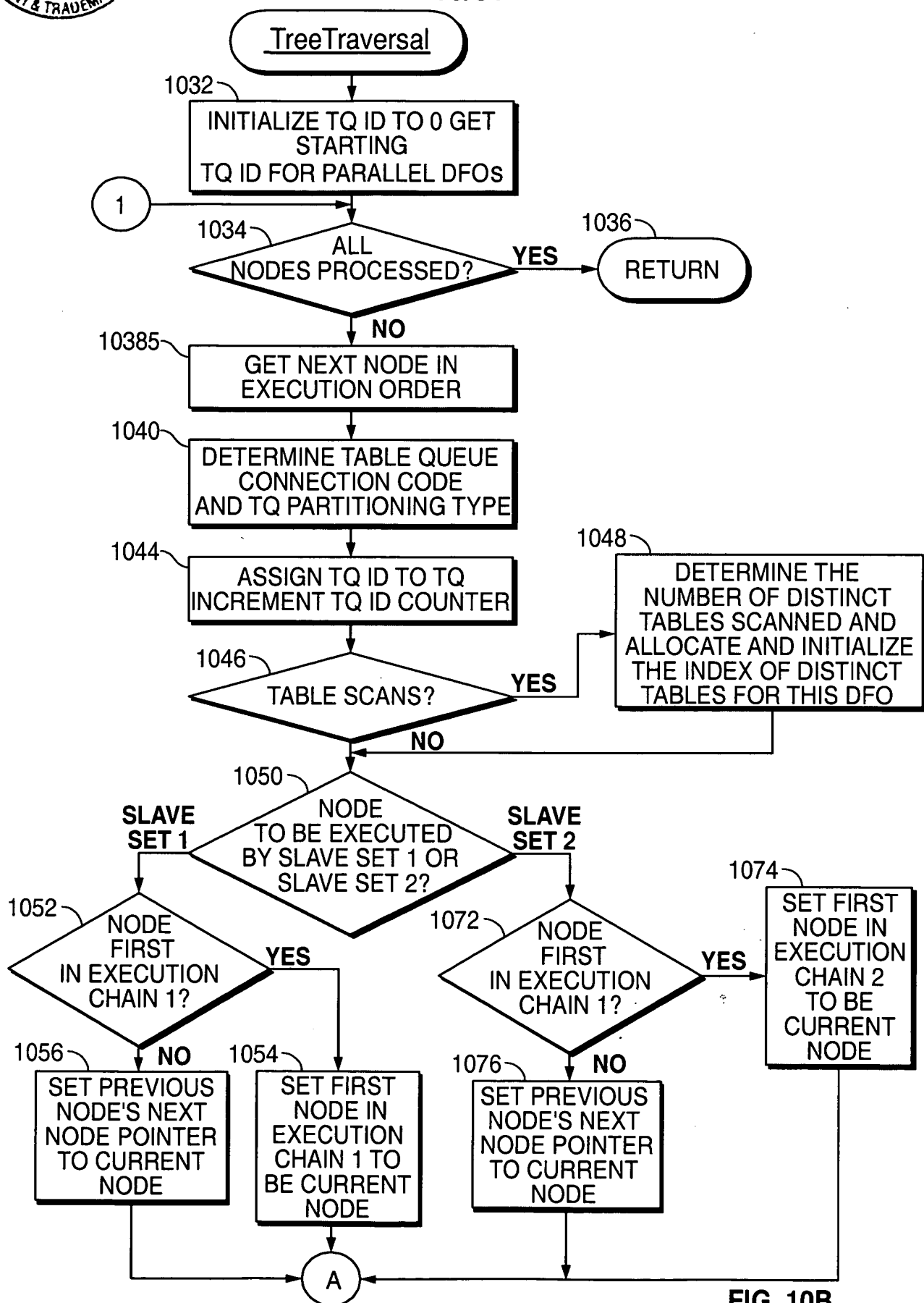
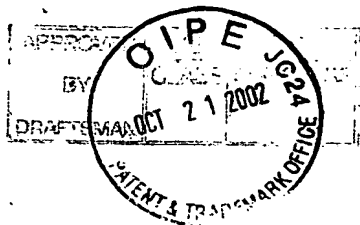


FIG. 10B



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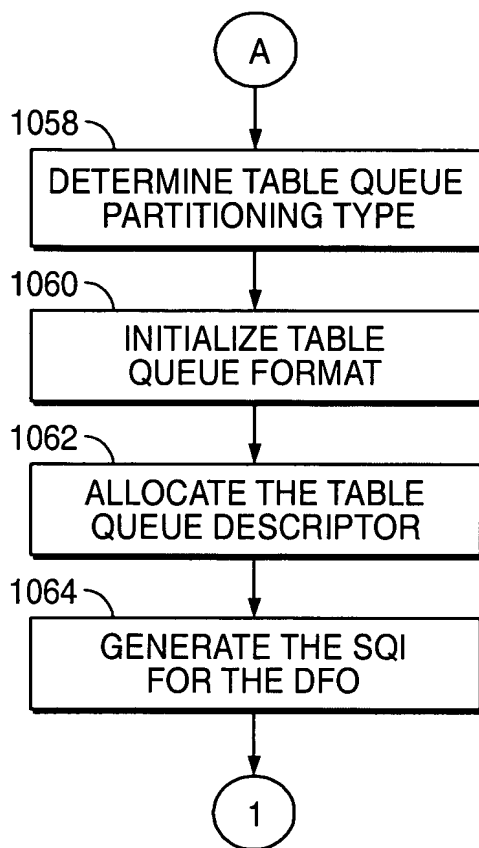
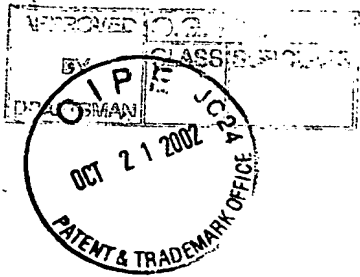


FIG. 10C



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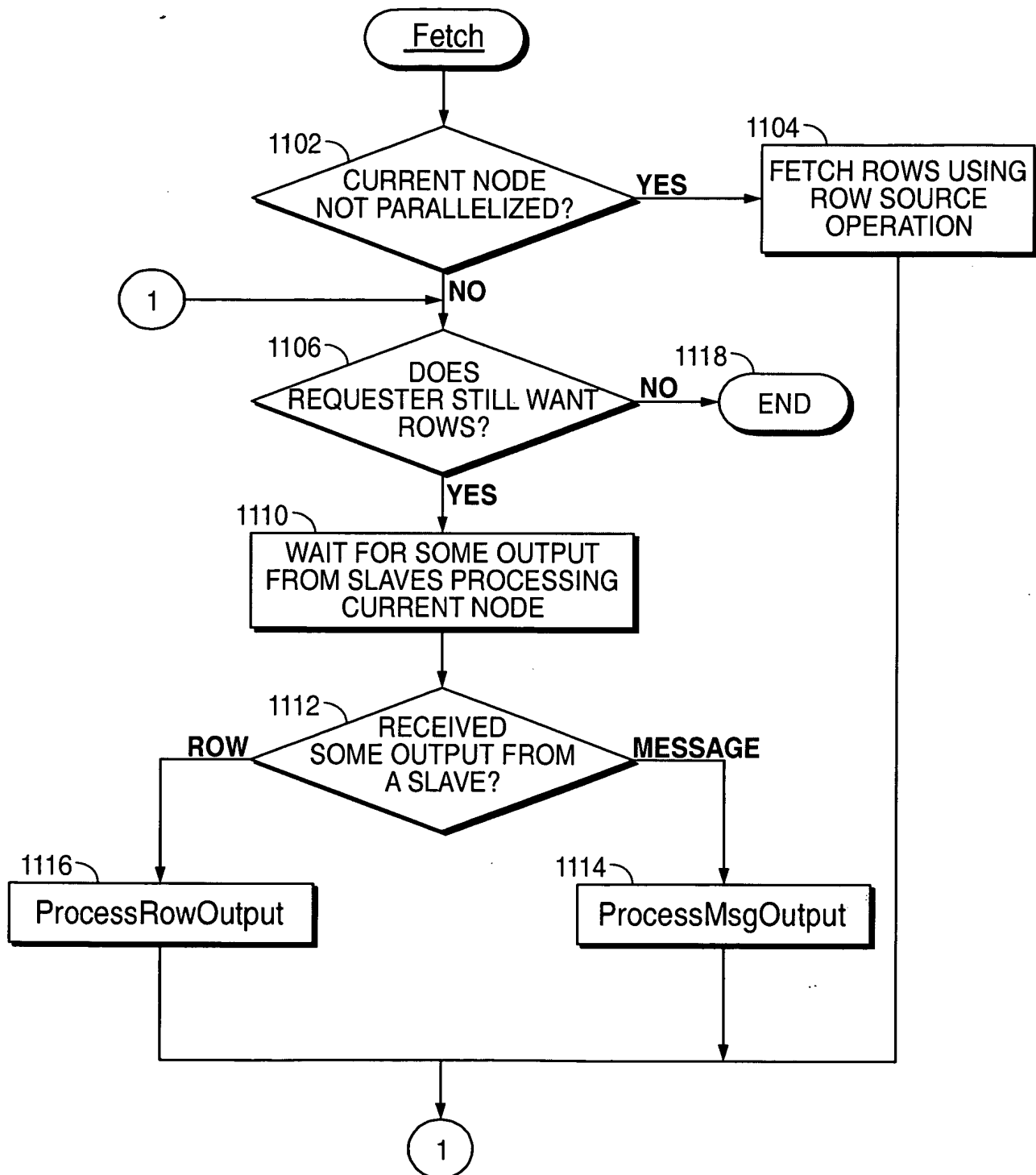
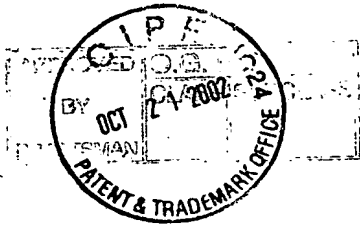


FIG. 11A



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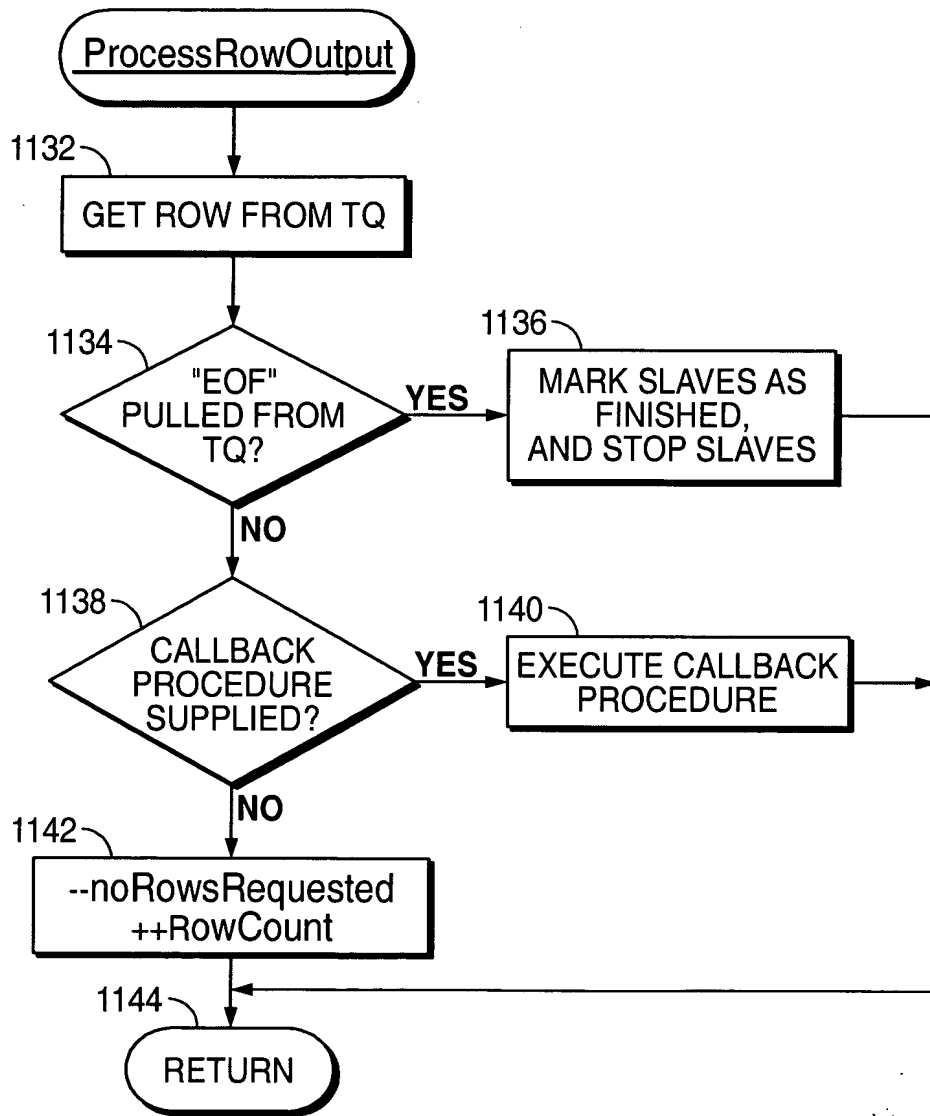


FIG. 11B

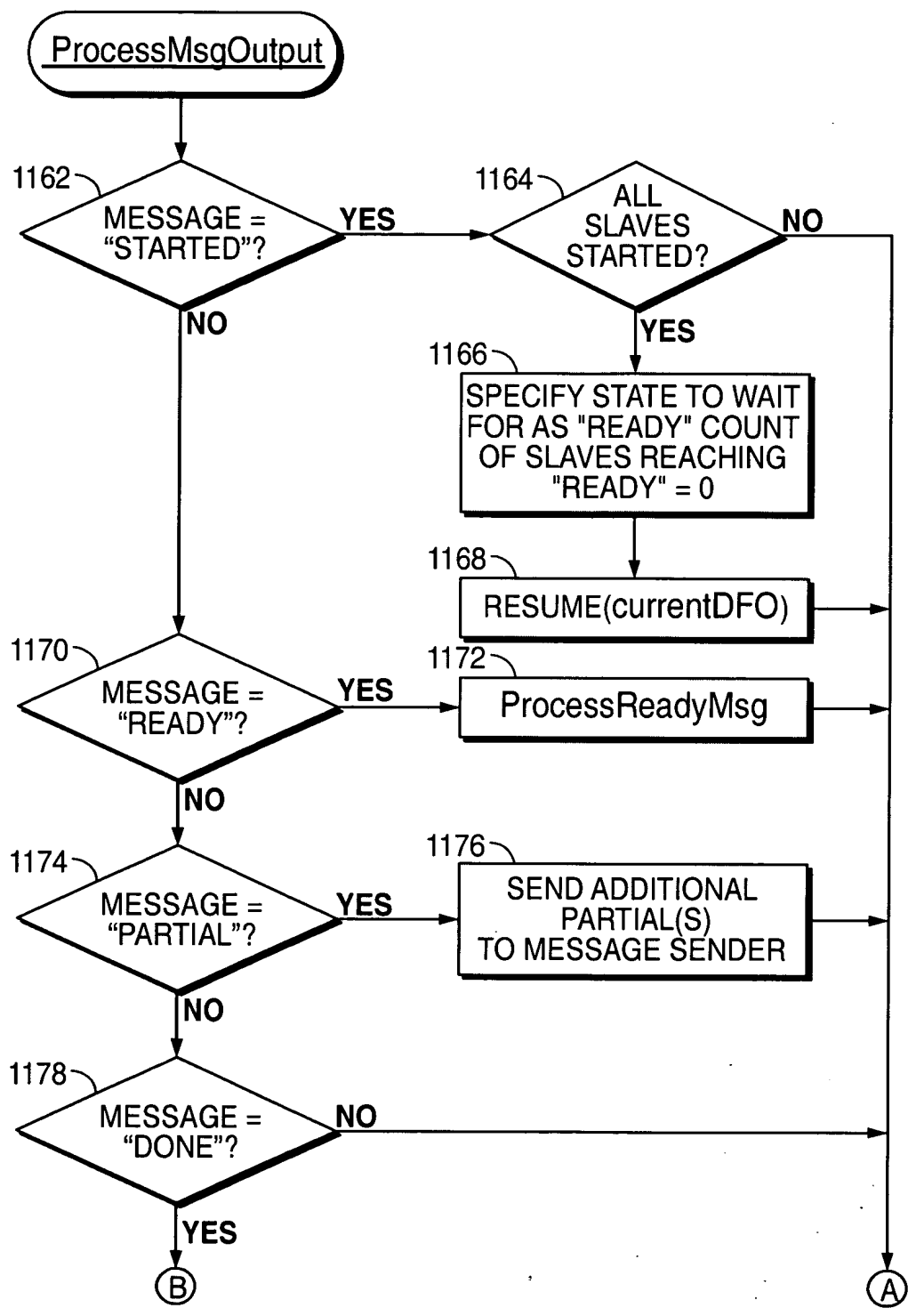


FIG. 11C



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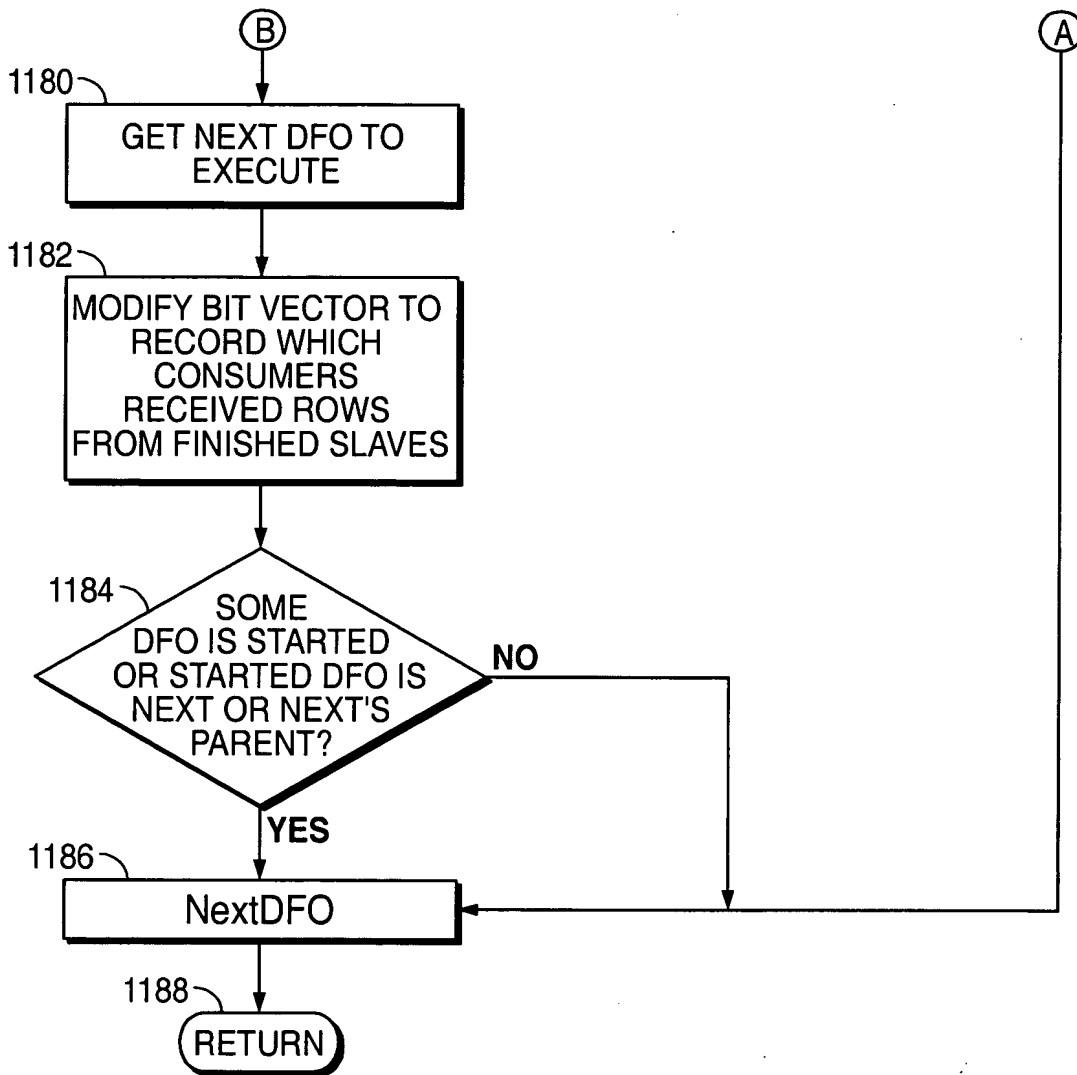
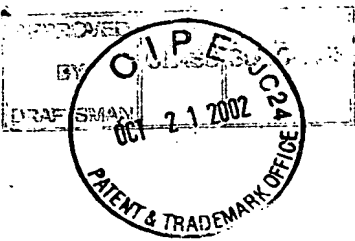


FIG. 11D



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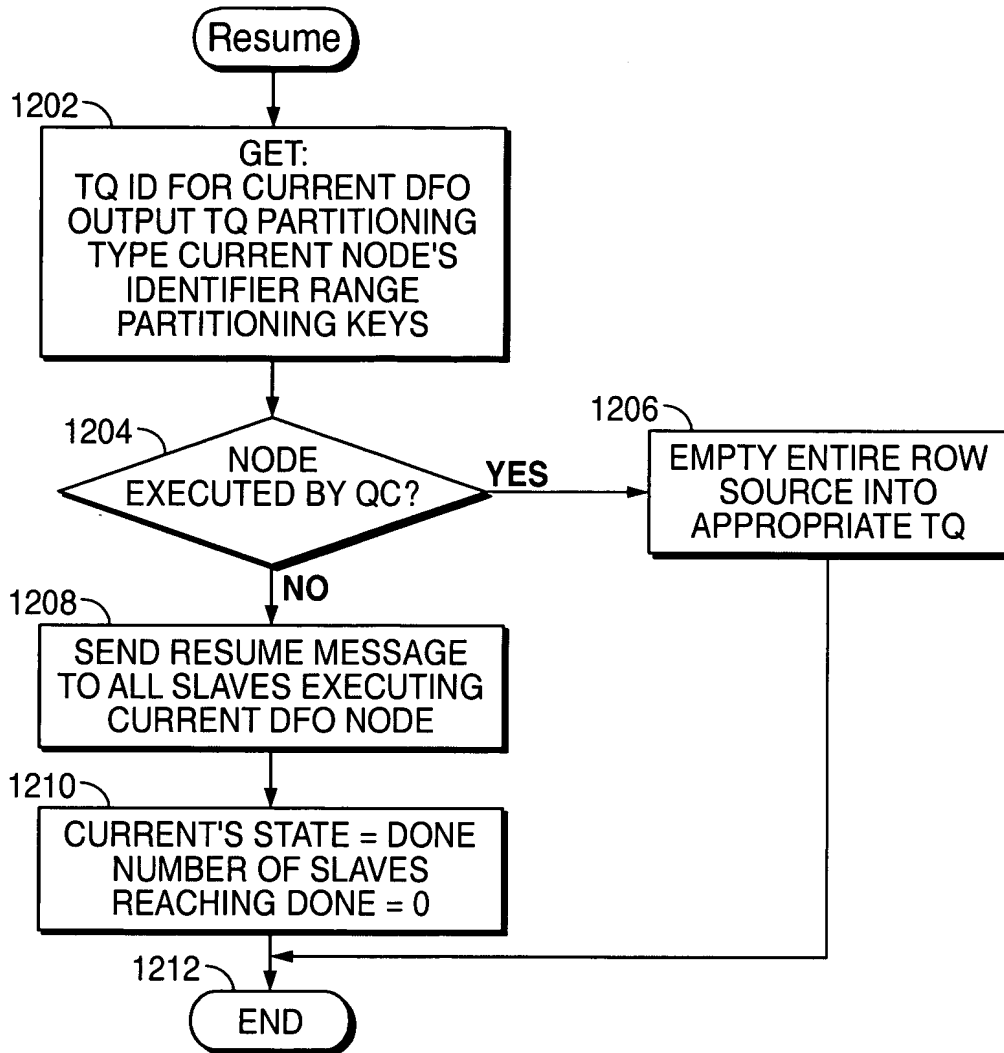


FIG. 12

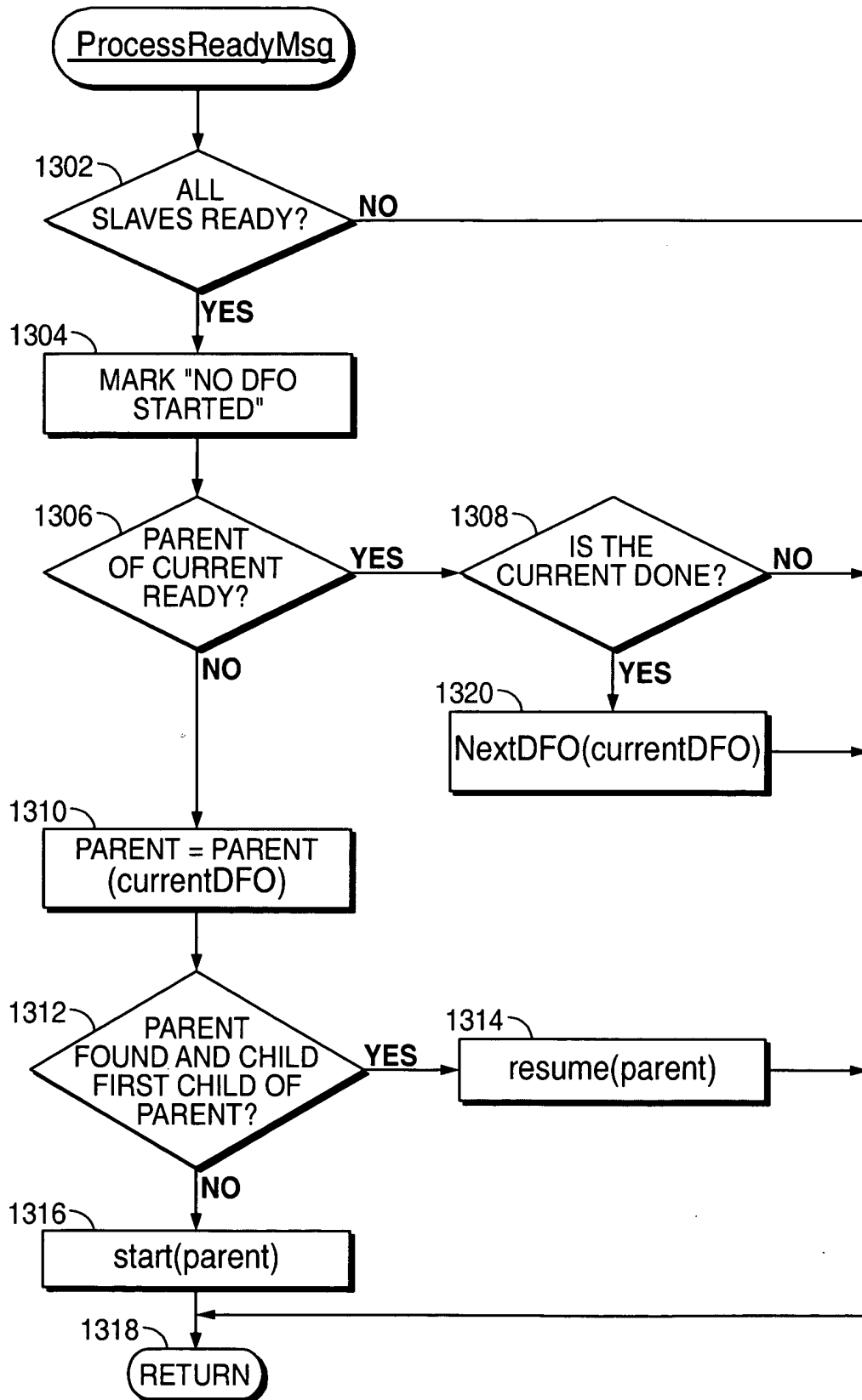


FIG. 13



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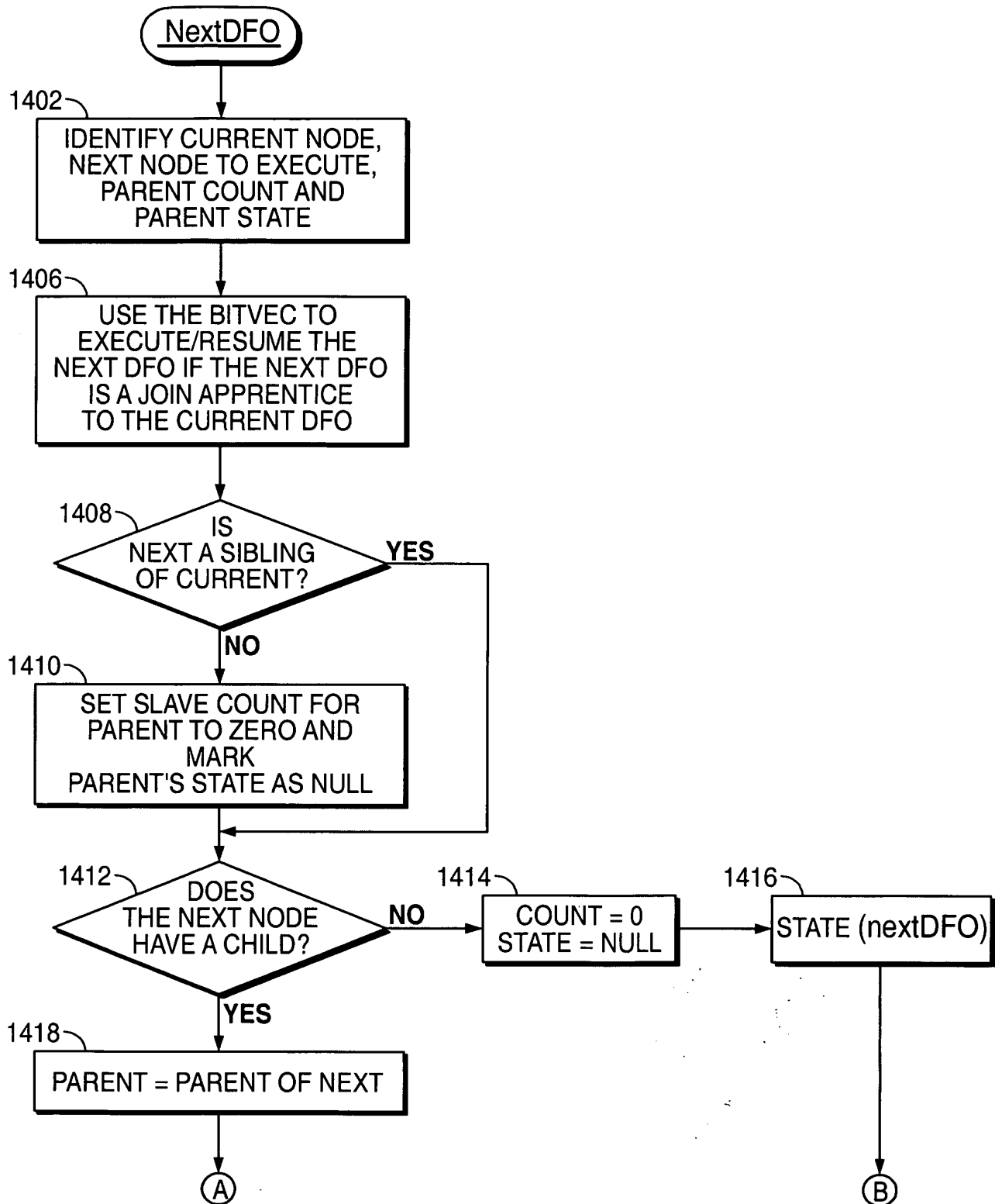


FIG. 14A

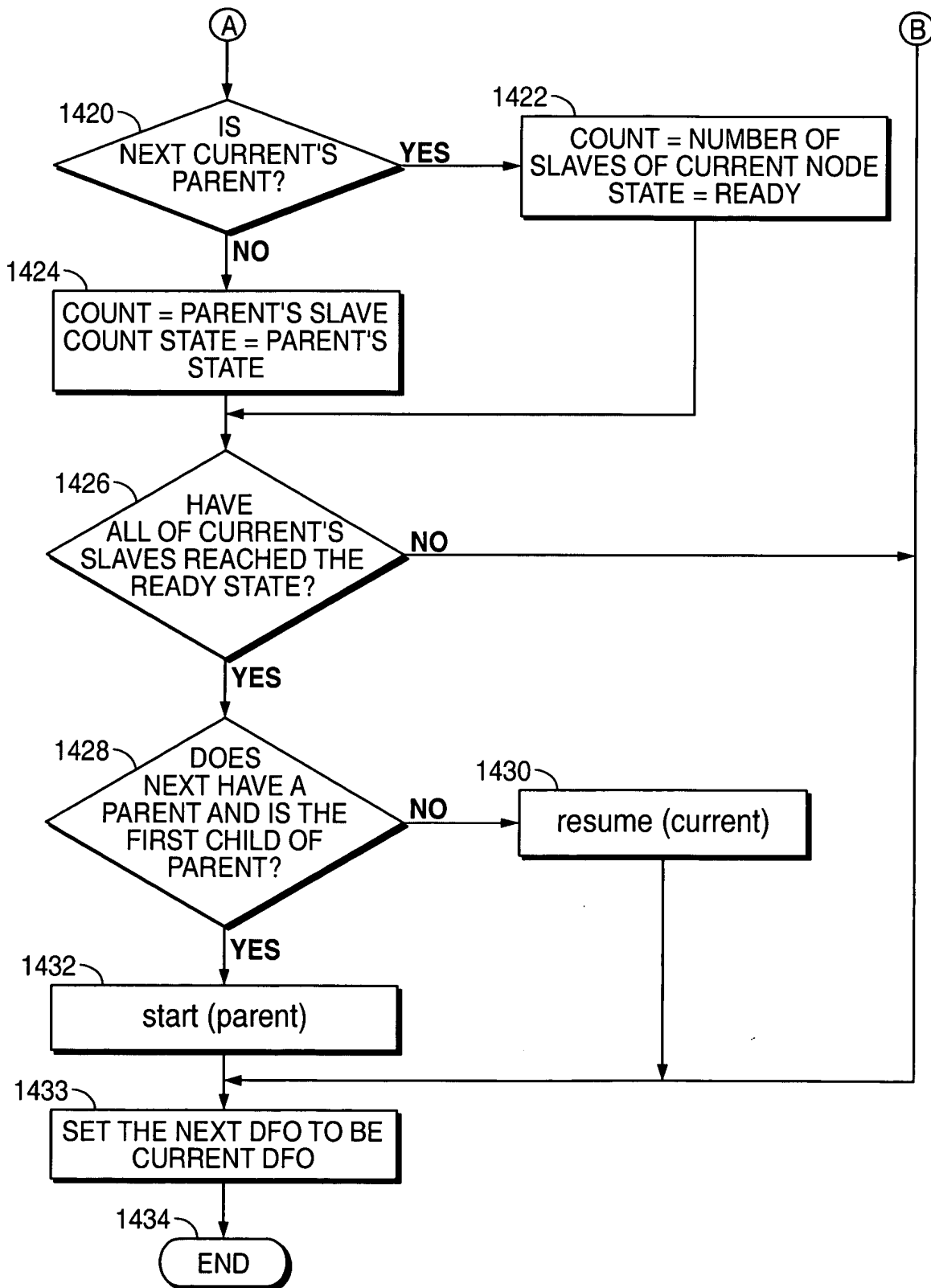


FIG. 14B

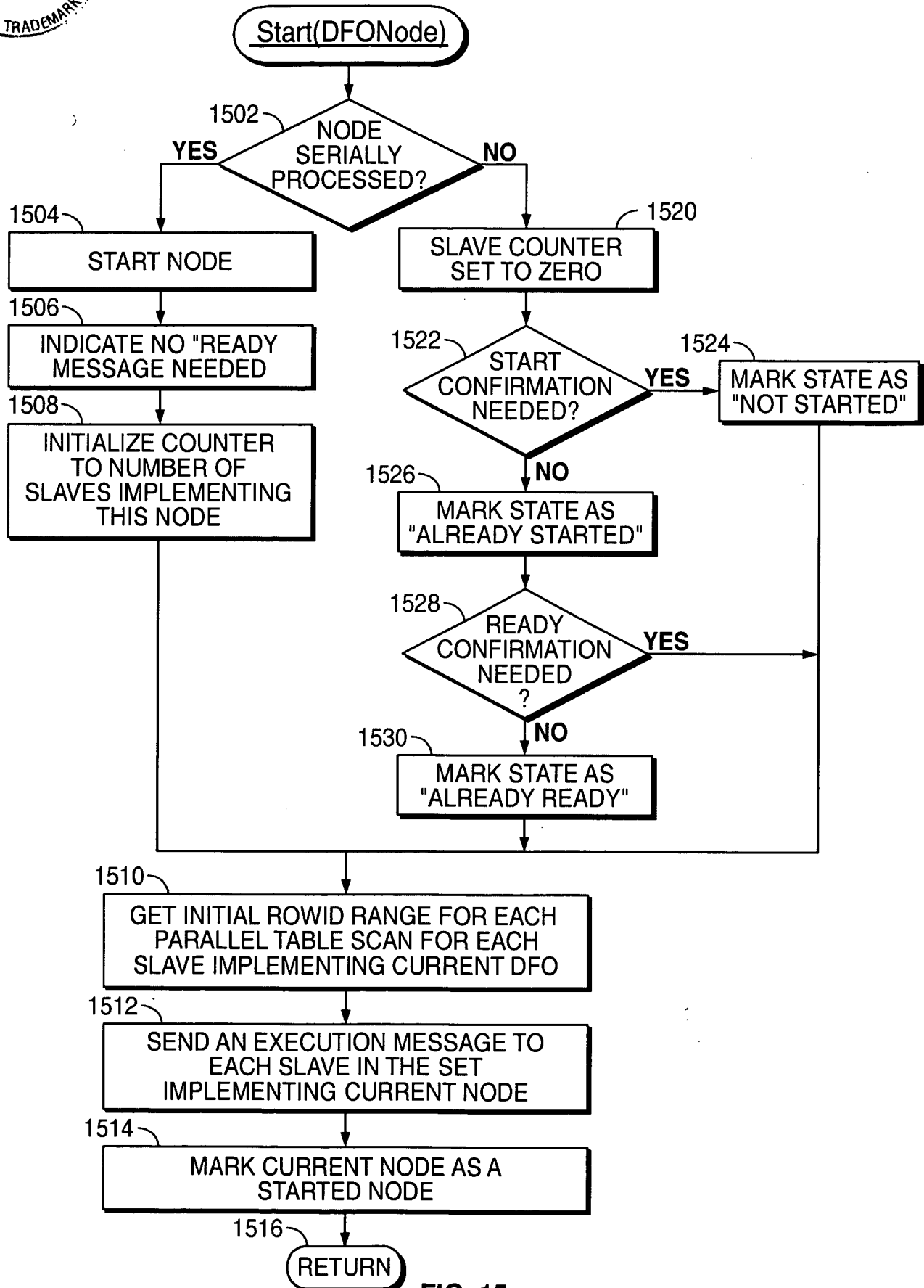
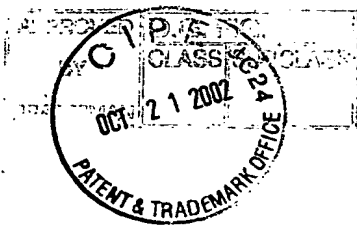
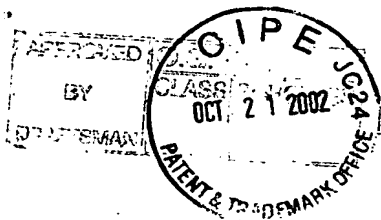


FIG. 15



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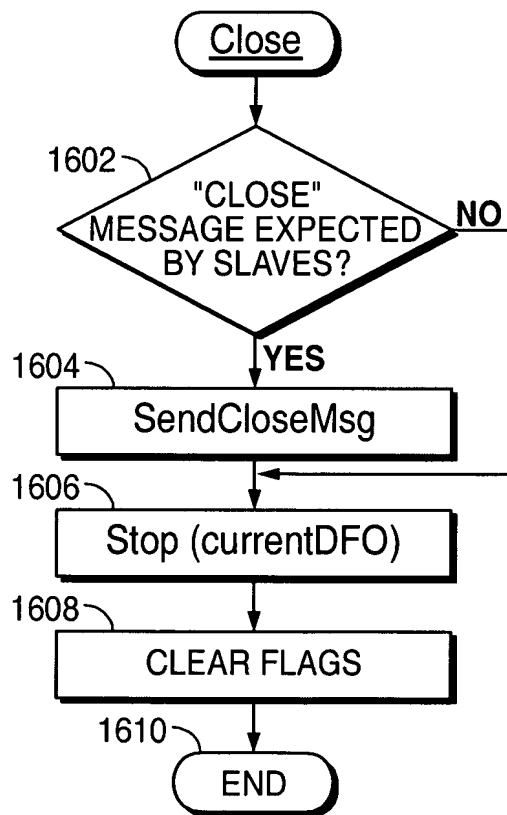


FIG. 16

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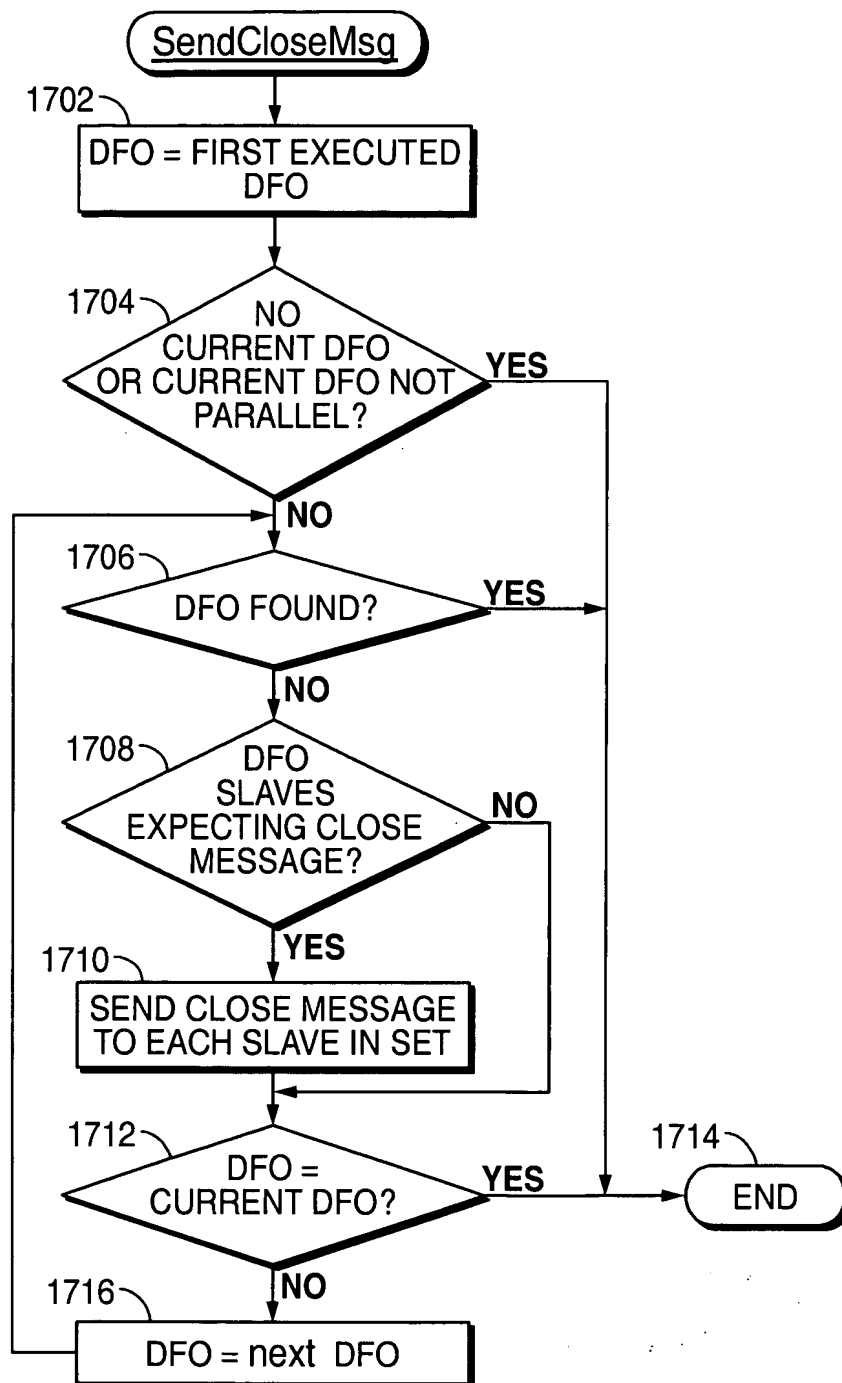


FIG. 17

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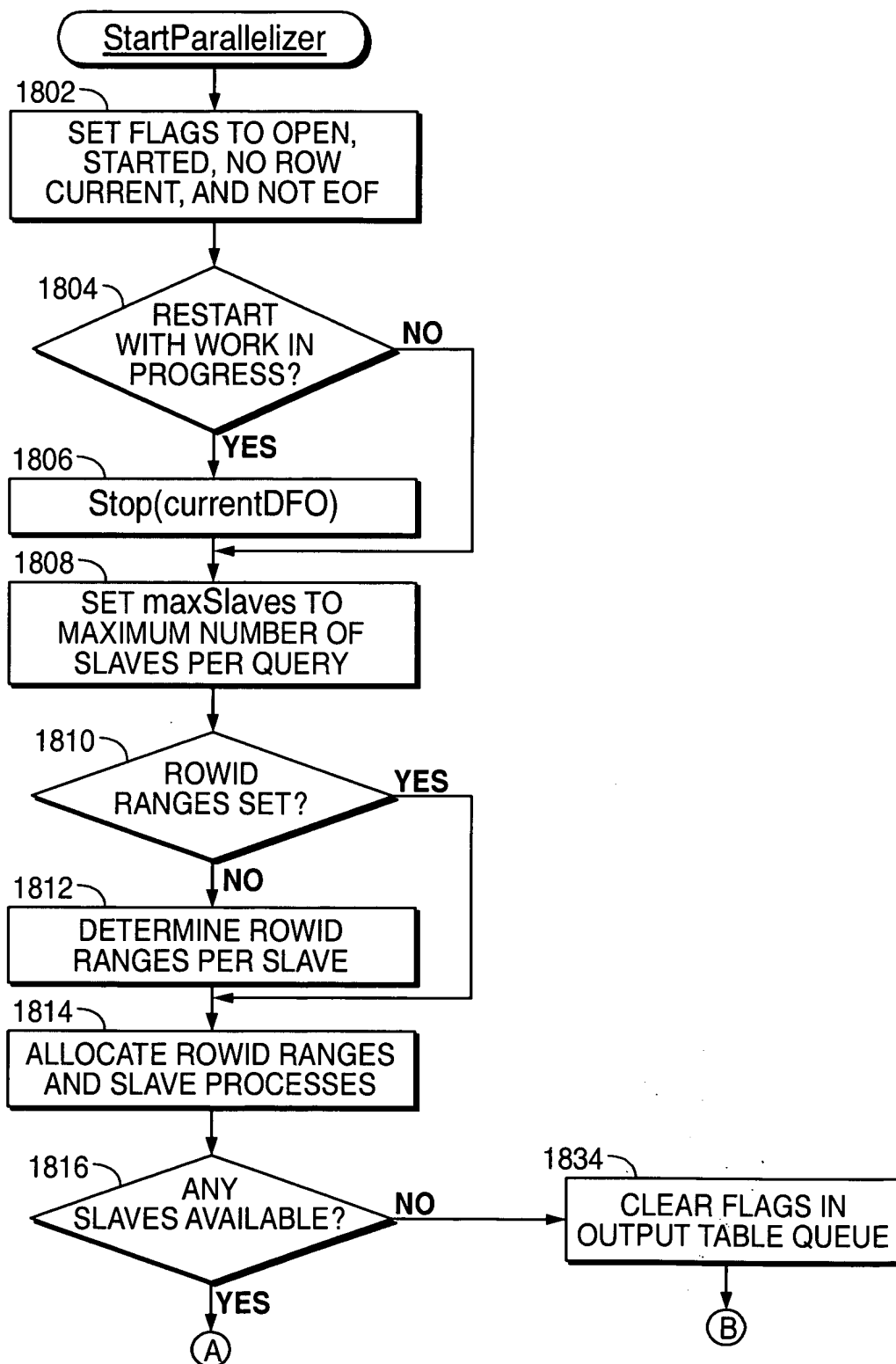


FIG. 18A

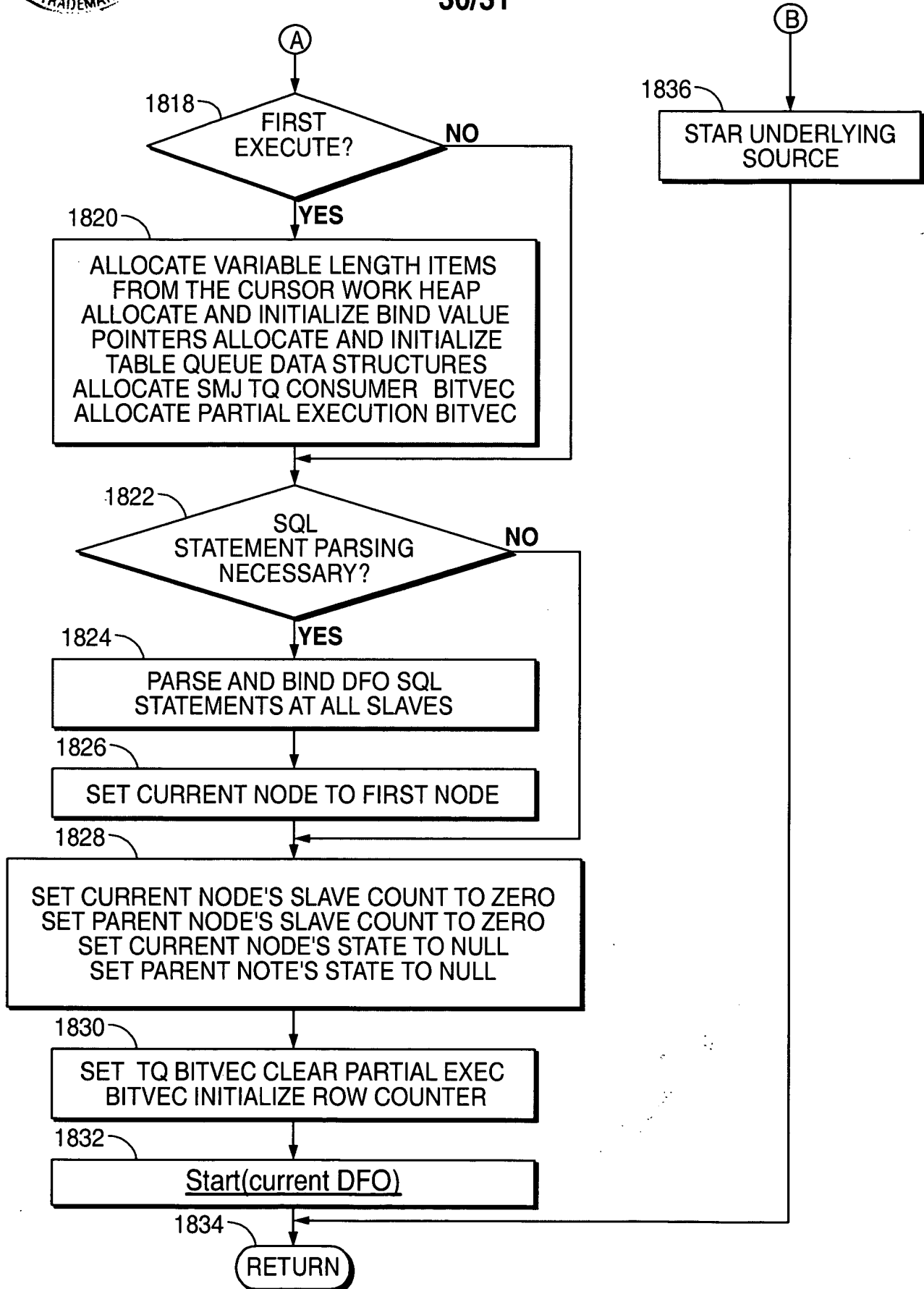


FIG. 18B

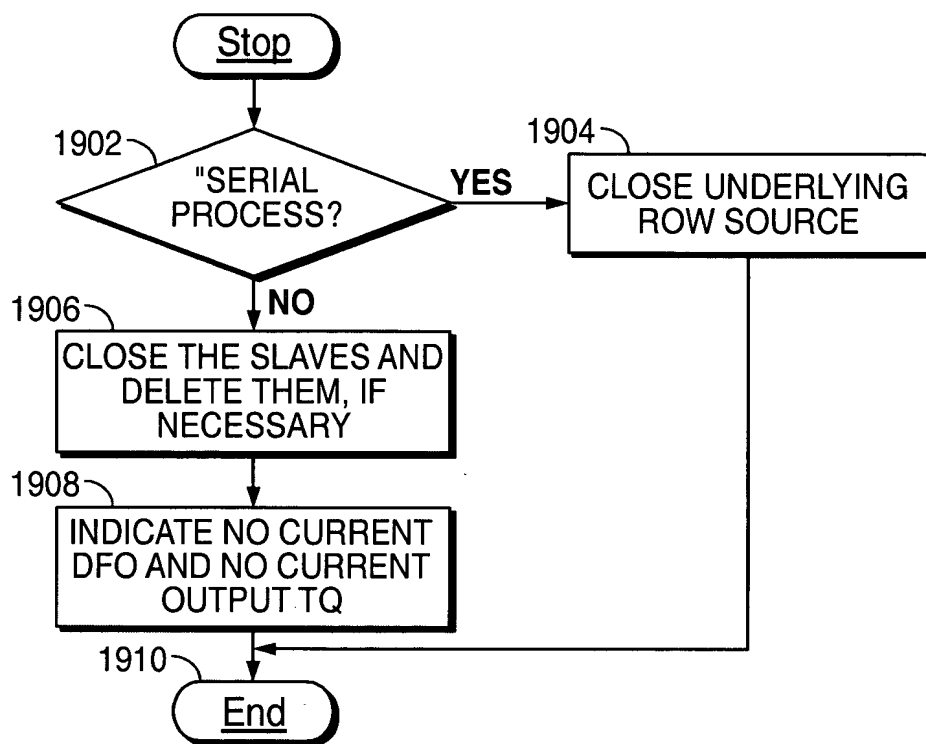


FIG. 19